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EXAMINER

MEHTA, PARIKHA SOLANKI

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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07/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/723,859

Applicant(s)

AVINASH ET AL.

Examiner

Parikha S. Mehta

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 and 35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 9 March 2007 have been fully considered but they are not persuasive. Applicant argues that the applied reference, Riederer (US Patent No. 5,363,844), fails to teach a) deriving a termination threshold from one or more motion attributes, b) determination of whether scan parameters are satisfied, c) selection of gated data from image data, and d) establishment of gating intervals (Remarks, p. 13 paragraph 2).

Regarding the argument that Riederer ('844) fails to disclose derivation of a termination threshold from one or more motion attributes, the reference discloses that imaging is not performed when the diaphragm is moving. The claims of the instant application broadly recite "deriving...a termination threshold from the one or more attributes," which can be interpreted to mean any step of terminating a process based on any characteristic of motion, which includes the absence or presence of motion itself. Riederer ('844) terminates imaging when the diaphragm is moving, which accordingly constitutes a termination threshold based on motion.

Regarding the argument that Riederer ('844) fails to disclose determination of whether scan parameters are identified, Applicant specifically argues that the reference fails to disclose determination of scan parameters as set forth in pages 15 and 16 of the instant specification. It is noted that the features upon which Applicant relies (i.e., matter in pages 15 and 16 of the specification) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Accordingly, the previous rejection of claims 10 and 22 stands and is maintained below.

Regarding the argument that Riederer ('844) fails to select gated data from image data, the registration scheme taught by the reference constitutes a selection of retrospectively gated data (col. 2 lines 36-48).

Regarding the argument that Riederer ('844) fails to teach establishment of gating intervals, Examiner respectfully directs Applicant's attention to the definition of the word "gate," as set forth by Merriam Webster (<http://www.m-w.com>):

Gate: a device (as in a computer) that outputs a signal when specified input conditions are met <logic gate>

Therefore, an image gating interval is interpreted to be any interval in which specified conditions for imaging are met. Accordingly, the imaging interval defined by diaphragm position, as taught by Riederer ('844), does in fact constitute a gating interval as claimed in the instant application.

Accordingly, Applicant's arguments are unpersuasive and claims 1-32 and 35 stand rejected as previously established in the prior Office Action, the rejections of which are reiterated herein.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8, 10-20, 22-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Riederer et al (US Patent No. 5,363,844), hereinafter referred to as Riederer ('844).

Regarding claims 1-4 and 13-16, Riederer ('844) discloses a method and program including the steps of acquiring a set of motion data during a breath hold, deriving an attribute of motion from the set of motion data, deriving an initiation threshold and termination threshold from the attribute, and generating a set of gated image data using gating intervals derived from the thresholds (col. 5 lines 31-53, col. 6 line 29-36). Riederer ('844) discloses that the set of motion data is acquired from a navigator pulse sequence, which is the same as a acquiring a set of pre-acquisition image data as claimed in the instant application (col. 5 lines 5-58). Riederer ('844) discloses that the displacement of the diaphragm may be detected via the NMR system, which constitutes an electrical sensor, and respiratory bellows, which constitute non-electrical sensors (col. 2 lines 14-15, col. 5 lines 34-37, col. 7 lines 2-6).

Regarding claims 5-8 and 17-20, Riederer ('844) shows that the image data is acquired when a first measurement of motion decreases below an initiation threshold, and acquisition ceases when motion increases above a termination threshold, wherein the beginning and end of the breath hold disclosed by Riederer ('844) constitute the initiation and termination thresholds, respectively, as claimed in the instant application (Fig. 3). Furthermore, the duration of the breath hold disclosed by Riederer ('844) constitutes a quiet period as claimed in the instant application. Riederer ('844) also discloses that the motion measurements are acquired concurrently with the image data (col. 5 lines 37-36).

Regarding claims 10-11 and 22-23, Riederer ('844) states that a respiration monitor is used to detect an acceptable breath-hold, and to generate the respiratory trigger pulse, which is the same as

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determining if a scan parameter is satisfied and acquiring image data based on the scan parameter as claimed in the instant application (col. 5 lines 48-54). In the method of Riederer ('844), the absence of the respiratory trigger pulse when the breath-hold is not acceptable is the same as a notification as claimed in the instant application.

Regarding claims 12 and 24, Riederer ('844) discloses a step and routine for providing a visual notification to the patient indicating breath hold status (col. 6 lines 54-66).

Regarding claims 25-29 and 35, Riederer ('844) discloses an imaging system and computer programs for performing the method of claims 1-12 of the instant application, wherein the system comprising an imager configured to generate a plurality of signals representative of the diaphragm and heart, data acquisition circuitry, data processing circuitry, system control circuitry for generating a set of gated image data, an operator workstation, a sensor-based motion determination system to measure electrical and non-electrical attributes of one or more organs, wherein the sensor-based motion determination system employs respiratory bellows, which constitute pressure sensors (Fig. 1, col. 7 lines 2-6, col. 3 line 4 – col. 5 line 30).

Regarding claim 30, Riederer ('844) provides means for generating gated image data by activating the imager based upon a gating interval (col. 2 lines 11-13).

Regarding claim 31, Riederer ('844) discloses means for generating gated image data by registration, which constitutes selectively processing a plurality of signals based upon gating intervals (col. 2 lines 38-41).

Regarding claim 32, the system of Riederer ('844) includes a color-coded visual feedback device configured to notify the patient of a breath hold status based upon data from a sensor-based motion determination system (col. 6 lines 54-66).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riederer (US Patent No. 5,363,844). Riederer ('844) teaches all features of the present invention as previously described in this Office Action. While Riederer ('844) teaches displaying the motion data and determining if the gating intervals are acceptable, Riederer ('844) does not explicitly teach the step of replacing the thresholds or gating intervals if they are determined to be unacceptable (col. 5 lines 48-50). However, it would have been obvious to one of ordinary skill in the art at the time of invention to add this step to the method of Riederer ('844), as it is well known in the art that image data acquired during an unacceptable gating interval is not accurate or useful.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In the same field of endeavor, Du (US Patent No. 6,144,874), Yanof et al (US PG Pubs. No. 2003/0188757) and Wang et al (US Patent No. 6,791,323) teach related methods and systems for respiratory gating and motion artifact correction during imaging.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parikha S. Mehta whose telephone number is 571.272.3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

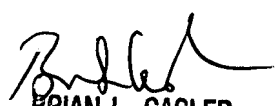

Parikha S. Mehta

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Examiner – Art Unit 3737


BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3737